

In re Patent Application of:

SHI ET AL.

Serial No. **09/891,886**

Filed: **06/26/2001**

REMARKS

Claims 1-6, 8-10 and 12-18 are pending in this application.

Claims 1, 2 and 6 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura in view of Liu and Ozkan.

Claims 3, 4 and 5 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura in view of Liu as applied to claim 1, and further in view of Stockill.

Claims 8 to 10 and 12 to 18 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura in view of Liu as applied to claim 1, and further in view of Hessel.

Claims 1, 3, 10, and 16 have been amended to overcome the objections of the Examiner and to define more clearly the invention in light of the prior art.

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Amendments to Claims

To more clearly recite the inventive aspects claimed and to emphasize the distinction between prior art and instant application, the following amendments have been introduced into:

Claim 1:

- a) "signal conditioning circuitry" has been replaced by "bandwidth selector module", in accordance with the bandwidth selector module 68 described in the second paragraph on page 19 of the specification, as well as Fig. 5.
- b) In the phrase "the signal conditioning **circuitry** being in communication with said front end", "**circuitry**" has been replaced by "**circuits**" to make it consistent with Fig. 5.
- c) "digital demodulator" has been replaced by "digital modulation decoder" for the sake of consistency with the first paragraph on page 19 of the specification and Figs. 4 and 5.
- d) "means" has been replaced by "controller" for the same reason as in b).
- e) "wherein the digital channel signal has a bandwidth set by the corresponding digital CATV standard" was deleted as being superfluous.

Claim 3:

- f) "a plurality of" has been replaced by "at least two" in order to exclude the possibility of only one signal conditioning circuit implied in the term "plurality", which is consistent with e.g. Fig. 5.

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Claim 10:

g) In the phrase "the signal conditioning **circuitry** being in communication with said front end", "**circuitry**" has been replaced by "**circuits**" to make it consistent with Fig. 5.

Claim 16:

h) "a bandwidth selector module in" has been added to the phrase "selecting in dependence upon a user's input from a user interface via the test meter", in accordance with the bandwidth selector module 68 described in the second paragraph on page 19 of the specification, as well as Fig. 5.

i) The word "test" has been added to the phrase "applying via the test meter" for consistency of terminology within the claim.

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Response to Arguments

The *Universal Test Meter for Digital Signal Distribution Systems* as disclosed in instant application provides a substantial advantage over prior art in that it can be applied to analyze the signal quality in CATV and other digital networks operating under different digital standards, such as the European, North American and others.

The invention is motivated by the desire to provide maintenance personnel with a flexible test instrument for analyzing and diagnosing modern CATV networks which can carry signals according to a variety of digital TV standards and modulation schemes.

1. Rejection of Claims 1, 2, and 6

Claims 1, 2, and 6, rejected under 35 U.S.C. 103(a) as being obvious over Kitamura (U.S. Patent 4,303,944) in view of Liu (U.S. Patent 6,222,891) and Ozkan (U.S. Patent 5,946,045), as set forth on pages 4-8 of the outstanding Office Action, are respectfully traversed.

Rejection of Claim 1

Kitamura's disclosure is directed at solving the problem of providing control voltages for tuning TV receivers by providing particular circuits, as illustrated in the preferred embodiments shown Figs. 4, 5A and 5B and described in col. 4, lines 12-67.

In Fig. 1 Kitamura teaches a simple typical analog TV receiver to which the disclosed control voltage circuit is applied. The tuning voltage supply merely controls the tuning range of the electronic tuner in the front end via switch S3. There is no provision for selecting a different circuit for

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different TV standards. In contrast, Claim 1 of instant application defines a bandwidth selector module having a plurality of signal conditioning circuits capable of user selection for handling signals of different digital CATV standards. The closest equivalent Kitamura teaches in Fig. 1 to a signal conditioning circuit is the single band amplifier 2. There is no suggestion or motivation given on how this would be expanded to two or more.

Kitamura's apparatus has no digital modulation decoder, no controller for analyzing the demodulated signal, nor a user interface operative to receive an analysis output. All of these features are claimed in Claim 1.

Furthermore there is no evidence in Kitamura of any motivation toward a test meter as claimed in Claim 1. Neither does the disclosure of Kitamura direct a person skilled in the art toward all the features of Claim 1.

Liu's disclosure is directed to "digital data communication systems and methods for operating such systems in order to synchronize a receiver's timebase to a remote transmitter's" (col. 2, lines 11-14). Although the TV receivers disclosed by Liu are digital in contrast to Kitamura's, nevertheless they are targeted primarily at performing various decoder functions other than network testing, such as frame synchronization, convolutional deinterleaving, Reed-Solomon error correction, derandomization (col. 6 lines 56-58) and trellis decoding (col. 7, lines 1-3).

Liu does not disclose a bandwidth selector module having at least two signal conditioning circuits capable of user selection for handling signals of different digital CATV standards, as in Claim 1. In fact Liu makes many references exclusively to only

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one CATV standard, which is based on a channel bandwidth of 6 MHz, for instance Fig. 3, col. 5, lines 39-42, etc.

Liu notes that various standards exist (Col. 1, lines 34-64), but does not teach the inclusion of at least two circuits in a receiver, each of which corresponds to a different standard, as in Claim 1. Liu describes being able to receive signals in either a low IF mode or subsampling on a standard tuner IF frequency (Col. 5, lines 34-47). However, these modes all relate to 6 MHz bandwidths and do not teach or disclose the ability to receive two or more standards, e.g. signals in the 7 or 8 MHz bandwidths as well.

None of Liu's TV receivers includes a controller for analyzing parameters of the demodulated signal and a user interface operative to receive an analysis output, both of which are features claimed in Claim 1.

Ozkan teaches toward a receiver and a method for demodulating and decoding signals in variable broadcast encoding format and provides in Col. 3, lines 7-10: "a receiver system, according to the principles of the invention, for demodulating and decoding signals of variable broadcast encoding format for display".

The disclosed receiver system does not have a bandwidth selector module with at least two signal conditioning circuits capable of user selection for handling signals of different digital CATV standards, as in Claim 1. Neither does it have a user interface operative to allow a user to select a digital CATV standard and to receive an analysis output.

While Ozkan's decoder provides a Forward Error Correction validity or lock indication to a controller, the actual FEC readings are not passed on to a user interface, as in the claimed

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invention.

It should be clear from the disclosures of Kitamura, Liu and Ozkan, in combination, that they do not teach or suggest all of the features of Claim 1. Notably, none of the cited prior art discloses a bandwidth selector module having at least two user selectable signal conditioning circuits for handling signals of different digital CATV standards. Therefore, the combination of Kitamura/Liu/Ozkan fails to suggest at least this feature of the claim.

Finally, since all three references are motivated toward solving three different problems, all distinct from the test meter of instant invention, Applicant respectfully submits that Claim 1 is not obvious and therefore patentable.

Rejection of Claim 2

With respect to Claim 2, in the Office Action Liu is said to disclose the test meter, wherein the plurality of digital CATV standards comprise ITU-T J.83 Annex A, Annex B, and Annex C (column 5, lines 9-10) and the plurality of digital demodulation decoding schemes comprise QAM and QAM variants (column 5, lines 3-7).

In the first instance Liu is specifically referring only to the coding format supported:

"The resulting digital data is error corrected with integrated trellis and Reid-Solomon decoders which support both the ATSC A/53 and ITU TJ.83 Annex A/B/C coding formats".

Coding formats are only a subset of digital CATV standards and therefore do not imply that at least two signal conditioning circuits capable of user selection for handling signals of

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different digital CATV standards is supported or taught, which is defined in Claim 2.

Liu refers several times to either two modes of intermediate frequency (IF) input signals (e.g. col. 5, lines 34-39) or QAM/VSB dual mode of operation - quadrature amplitude modulation (QAM) and vestigial sideband modulation (VSB) (e.g. col. 1, lines 17-18, col. 7, lines 43-45). Upon detection of a channel change request (col. 7, lines 14-28), a host may direct the receiver 10 in Fig. 1 to download specific configuration. Thus no selection occurs between "at least two signal conditioning circuits, each signal conditioning circuit corresponding to one digital CATV standard".

Throughout his disclosure, components for only one standard at a time are presented, e.g. components associated with Annex B such as a 6MHz SAW filter to limit out-of-band energy (col. 5, lines 40-43), or the NTSC rejection filter(s) (col. 9, lines 50-64; Fig. 1, reference number 28; Fig. 4, reference number 56). Thus his teaching does not include or direct towards a plurality of signal conditioning circuits each corresponding to one of digital CATV standards comprising ITU-T J.83 Annex A, Annex B, and Annex C, thereby differing substantially from instant application, as recited in Claim 2.

Applicants respectfully submit that the disclosures of Kitamura and Liu omit or fail to disclose several substantive aspects of the present application, nor do they provide any motivation for a person skilled in the art. Thus Claim 2 cannot be deemed obvious.

Rejection of Claim 6

Claim 6 cannot be deemed obvious by virtue of its dependence on patentable Claim 1, based on arguments presented supra.

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2. Rejection of Claims 3, 4, and 5

Claims 3, 4, and 5, rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura in view of Liu, and further in view of Stockill (U.S. Patent 5,359,367), as set forth on pages 8-10 of the outstanding Office Action, are respectfully traversed.

Rejection of Claim 3

In the Office Action, Stockill is said to disclose the test meter wherein the plurality of signal conditioning circuits comprises a first filter that filters the acquired signal in accordance with a first CATV standard and a second filter that filters the acquired signal in accordance with a second CATV standard (column 4, lines 3-13).

Stockill is directed toward a broadcast receiver for the reception of data encoded in or carried by TV signals (e.g. col. 1, lines 8-11) and the demodulation of low bandwidth digital teletext broadcast from satellites in the sub-carriers of the main television signal (col. 2, lines 54-63, col. 4, lines 54-59). As the demodulation of broad bandwidth digital CATV signals are not an object of his disclosure, he is seen to be teaching away from the test meter for digital CATV systems claimed in Claim 3.

To enable the extraction of teletext to be performed from signals of US, UK and European broadcasting standards (col. 4, lines 3-13), he discloses a series of bandpass filters (66a-c in Fig. 4) for adjusting the received signal bandwidth appropriately.

However, Stockill does not disclose the digital demodulator operative to select one demodulation scheme from a plurality of digital demodulation decoding schemes, which is recited in Claim 3. Neither does he provide for a means to analyze the digital

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signal and output analysis results, as is the case in Claim 3.

Thus, at the time of the invention it would not have been obvious for one of ordinary skill in the art to add the parallel filtering taught by Stockill to Kitamura's and Liu's systems to arrive at the test meter claimed here.

Rejection of Claim 4

Careful reading of Liu's disclosure reveals that he does not disclose the test meter of Claim 4, wherein the first and second filters comprise SAW filters each according to its own digital CATV standard. Liu discloses only a single 6 MHz SAW filter to limit out-of-band signal energy (col. 5, lines 39-42). There is no suggestion or direction given for adding additional SAW filters, as the single SAW filter adequately fulfills the requirements for the dual mode QAM/VSB receiver of Fig. 1.

Since Claim 4 recites the presence of two SAW filters, it cannot be deemed obvious or be derived from the combined disclosures of Kitamura and Liu. In addition, Claim 4 cannot be deemed obvious by virtue of its dependence on Claims 1 and 3, which have been shown to be patentable *supra*.

Rejection of Claim 5

Liu recognizes the existence of two transmission mode standards, one defined by ITU-T J.83 Annex A/C for outside the U.S. and one defined by ITU-T J.83 Annex B for inside the U.S. (col. 1, lines 51-64), as well as a need for a television receiver system capable of demodulating a variety of modulation formats (col. 1, lines 65-67; col. 2, lines 1-3). He does not, however, disclose a system where each of the above standards is implemented with its own corresponding signal conditioning circuit in the same apparatus.

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The apparatus claimed in Claim 5 recites a plurality of signal conditioning circuits, each corresponding to a digital CATV standard, wherein "first digital CATV standard comprises ITU-T J.83 Annex A and said second digital CATV standard comprises ITU-T J.83 Annex B".

Thus the disclosures of Kitamura and Liu do not teach or suggest the features of Claim 5.

3. Rejection of Claims 8-10, and 12-18

Claims 8-10, and 12-18, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura in view of Liu, and further in view of Hessel, as set forth on pages 10-11 of the outstanding Office Action, are respectfully traversed.

Rejection of Claim 8

The Examiner takes the position that Hessel discloses the user interface recited in Claim 8 (column 4, lines 38-46).

Turning now to the cited description, Hessel states:

"FIG. 3 describes a field programmable radio frequency communications system that can be programmed by a user to form a digital signal processing system 10 that is adapted to be coupled to a radio frequency receiver and/or transmitter subsystem 12 to configure a radio frequency receiver and/or transmitter system to operate with any of a plurality of radio frequency waveforms or signaling schemes, such as, AM, AME, A3E, H3E, J3E, CW, SSB, M-PSK, QAM, ASK, and angular modulation, such as, FM, PM, FSK, CMP, MSK, CPFSK etc."

The motivation for Hessel's disclosure is to improve radio performance through a refinement of a carrier frequency estimate method, which is to various degrees dependent on the type of

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modulation and signaling used. The radio frequency waveforms or signaling schemes he lists are very general, many of which do not even apply to signals as used in a network such as digital CATV.

In the absence of more specific teaching, his disclosure contains nothing that directs or suggests a preferred way for extending the capability of a digital CATV network analysis apparatus.

Furthermore, Hessel does not teach a plurality of signal conditioning circuits, each such circuit corresponding to one digital CATV standard, as in Claim 8.

Claim 8 is dependent on Claim 1 with an additional recitation that the user interface is operative to allow a user to select one digital modulation decoding scheme from a plurality thereof. The claimed user interface also comprises the output of analysis results, which has no counterpart in Hessel's disclosure. Accordingly Claim 8 cannot be deemed obvious for one of ordinary skill in the art from the disclosures of Kitamura and Liu in view of Hessel.

Rejection of Claim 9

Claim 9 is dependent on Claim 8, which in turn depends on Claim 1.

Although Liu discloses the demodulation of 64/256-QAM (col. 5, lines 3-7), he does not provide for a user interface operative to select one digital modulation decoding scheme as recited in Claim 9. Therefore Claim 9 cannot be deemed obvious from the disclosures of Kitamura and Liu.

Rejection of Independent Claims 10 and 16

The Examiner has rejected independent Claims 10 and 16 on the same grounds as Claims 1 and 8.

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The same patentability arguments applicable to Claim 1 apply also to independent Claims 10 and 16, both of which have been amended as recited earlier. Applicants believe that with the above amendments, the grounds for rejection have been overcome for Claims 10 and 16.

Rejection of Claim 12

The Examiner has rejected Claim 12 on the same grounds as Claim 1. As Claim 12 is dependent on Claim 10, Applicant submits that with the amendments the grounds for rejection of Claim 12 have also been overcome.

Rejection of Claim 13

The Examiner has rejected Claim 13 on the same grounds as Claim 3.

Claim 13 is dependent on Claim 12, so it is believed that with the amendments to Claim 10 on which Claim 12 depends, the grounds for rejection of Claim 13 have also been overcome.

Rejection of Claims 14 and 17

The Examiner has rejected Claims 14 and 17 on the same grounds as Claim 5. Since Claim 14 is dependent on Claim 10 via Claims 12 and 13, and amended Claim 10 is patentable over Kitamura and Liu, it is believed that the grounds for rejection of Claim 14 have also been overcome.

Claim 17 is dependent on amended Claim 16 for which it is believed that the grounds for rejection have been overcome.

Rejection of Claim 15 and 18

The Examiner has rejected Claims 15 and 18 on the same grounds as Claim 9. Claims 15 and 18, which recite QAM and QAM

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variants in the plurality of demodulation schemes, are dependent on Claims 10 and 16, respectively. The same arguments apply to them as for Claim 9 above. With the amendments introduced in Claims 10 and 16 it is believed that the grounds for rejection have been overcome.

Conclusion

Finally, in view of the foregoing amendments and arguments, favorable reconsideration of this application, and a Notice of Allowability of all of Claims 1-6, 8-10 and 12-18 are respectfully requested.

Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 50-1465 and please credit any excess fees to such deposit account.

Respectfully submitted,

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